

J. J. S. Pamphlet Box No. II

THE

Merigomish Coal Mining Company,

NOVA SCOTIA.

CAPITAL, \$400,000.

SHARES TEN DOLLARS EACH.

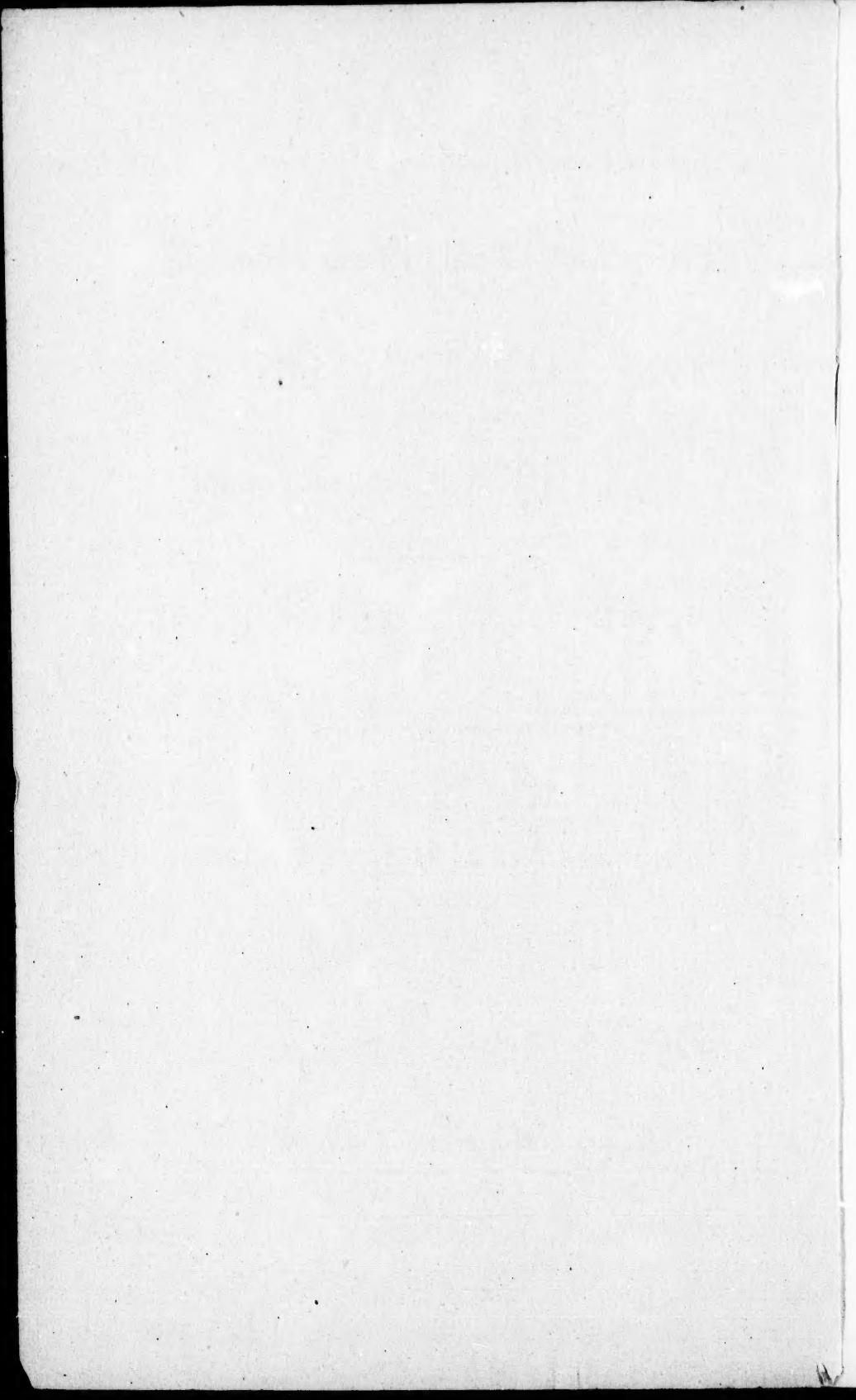
Incorporated March 31, 1866.

Office,--194, Hollis Street,

HALIFAX, N. S.

HALIFAX,
WILLIAM MACNAB, PRINTER.

1867.



THE
MERIGOMISH
COAL MINING COMPANY.

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Organized June 19th, 1866.

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HALIFAX, N. S.

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PAYABLE IN INSTALMENTS AS MAY BE REQUIRED

Directors.

WILLIAM H. TULLY, Esq., PRESIDENT.

LEWIS R. KIRBY,

THOMAS M. BRAINE,

D. HENRY STARR,

STUART TREMAIN,

C. STUART SILVER, TREASURER,

JOSEPH STARR, SECRETARY.

Office.

194 HOLLIS STREET, HALIFAX, N. S.

MERIGOMISH COAL MINING COMPANY.

Incorporated A. D. 1866. Capital, \$400,000. Shares \$10 each. Extent of area held, 1920 acres, or 3 square miles, containing over 30,000,000 tons of minable coal. Estimated cost of mining and putting on board of ship, from \$1 to \$1.50 per ton. Price realized on board of ship, \$2.50.

As the fine Harbour of Merrigomish is situated less than one mile from the eastern extremity of this mine, and as the Pictou Railroad, connecting Pictou Harbour (one of the finest on the Gulf of St. Lawrence) with the Harbour of Halifax, being the finest in North America, is but 52 chains from the western extremity of this mine, the facilities for shipment and transportation are unexcelled.

The entire proceeds of 12,900 shares, now offered by the Directors for sale, as well as \$24,500—the proceeds of shares already sold,—to be applied as working capital.

The fact that the original proprietors, after spending several thousand dollars in purchasing and prospecting the mine, have asked for no cash, but have taken shares in compensation for it, besides subscribing \$4000 toward the present working capital, must be deemed a sufficient guarantee as to the desirability of the investment.

An Act to Incorporate the Merrigomish Coal Mining Company.

(Passed the 31st day of March, A. D., 1866.)

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| 1. Incorporation. | 8. List of stockholders. |
| 2. Capital stock. Shares. When to go into operation. | 9. Meetings—where held. Agent. Service of process. |
| 3. First meeting—when and where held. Company—how organized. | 10. Proceedings to obtain lands. |
| 4. Liability of shareholders. | 11. Books, &c., open to inspection. |
| 5. Company when to go into operation. | 12. Act—when to cease. |
| 6. Lands, &c., may be received in payment of stock. | 13. Company may construct railways. |
| 7. Transfer of shares. | 14. Company may render Merrigomish harbor navigable. May erect piers, &c. Harbor to be open to navigation. |

Be it enacted by the Governor, Council, and Assembly, as follows:

1. Lewis R. Kirby, John J. Sawyer, and Peter Lynch, their associates, successors, and assigns, are hereby constituted and declared to be a body politic and corporate, by the name of the *Merrigomish Coal Mining Company*, for the purpose of opening and working coal mines in the Island of Cape Breton, and the county of Pictou, or elsewhere in the Province of Nova Scotia, and manufacturing coal oil and other substances from coal, and trading in the products of such mines or manufactures, and transacting business connected with any of the purposes aforesaid, or any of them; to purchase, take, or lease, or otherwise acquire any lands or other property; and to construct and make such railways, tramways or other roads as may be deemed necessary for the transportation of the products of mines worked by the said company, and of other articles, to and from such mines; and to purchase or hire, construct, build, or erect all such wharves, docks and piers, mills, houses, buildings, and machinery as may from time to time appear expedient; and to do all other matters and things which the company may deem incidental or conducive to those objects, or any of them.

2. The capital stock of the company shall be two hundred thousand dollars, divided into shares of ten dollars each, which shall be personal property, transmissible and assignable as such; and the company shall have power to increase their capital stock to five hundred thousand dollars by the issue of new shares; but the company shall not go into operation until twenty-five per cent. of the capital stock shall have been actually paid in.

3. The first meeting of the company shall be held at such time and place in this Province as the said corporators or any three of them shall determine, and of which public notice shall be given in one

or more newspapers published in the city of Halifax, in this Province, at least twenty days previous to such meeting; at which, or at any subsequent meeting, the company may be organized by the election of not less than three directors and of other necessary officers; and the shareholders present, in person or by proxy, shall have power to organize the company, to establish bye-laws, and elect all necessary officers.

4. No member of the corporation shall be liable in his person or separate estate for the debts of the company to a greater amount than the stock held by him in the company, unless he shall have rendered himself liable for a greater sum by becoming surety for the debts of the company, deducting therefrom the amount actually paid to the company on account of such stock; but no shareholder who may have transferred his interest in the stock of the company, shall cease to be liable for any contracts of the company entered into before the date of such transfer, so as any action in respect of such liability shall be brought within six months after such transfer.

5. So soon as five thousand shares in the capital stock of the company shall have been subscribed for, and twenty-five per cent. of the capital stock paid in, the company may go into operation.

6. The directors of the company may receive lands, mines, buildings, wharves, machinery, mining rights or privileges, or any interest therein, respectively, in payment of stock subscribed for, or of any instalment or instalments due thereon; but, subject, nevertheless, to such conditions as to valuation or acceptance of the same, or otherwise, as may be imposed by the bye-laws of the company.

7. The transfer of shares in the company shall be valid and effectual for all purposes from the time such transfer is made.

8. A list of the stockholders of the company, and of the number of shares held by each of them on the first days of May and November in each year, certified under the hands of the President and Secretary, shall be filed in the months of May and November in each year with the Registrar of Deeds of the county or district where the principal works of the company are situate in this Province; such certificate to contain the names of the stockholders, and the number of shares held by them, respectively, on the first day of the month in which such certificate is filed; and it shall not be necessary to file any other certificate of transfer or copy thereof.

9. The meetings of the company shall be held at such place in this Province as the directors may appoint; and the company, through their directors or otherwise, shall appoint a recognized manager or agent resident in this Province, service on whom of all process, notices, and other documents shall be deemed to be sufficient service on the company, and the name and address of such agent shall be filed with the Registrar of Deeds for the county of Halifax. In default of the appointment, or in case of the absence or death of such agent, process, notices, and documents may be served on any officer or employee of the company, or for want of such officer or employee, may be posted on some principal building of the company, and such

service or posting shall be deemed a sufficient service on the company.

10. Whenever it shall be necessary in the construction or maintenance of the works of the company, that the company should be invested with lands contiguous thereto, and no agreement can be made for the purchase thereof, it shall be lawful for the directors to apply by petition, with a plan annexed, to any one of the judges of the Supreme Court, setting forth the nature and situation of the lands required, the names of the owners or occupiers thereof, and praying a conveyance of the same to the company; whereupon such judge, being satisfied that the lands are required, and are not more extensive than may be reasonably necessary, shall appoint a time and place for the consideration of such petition, and shall direct a proper notice in writing to be served upon the owners or occupiers of the lands, if in the Province, and to be published for the period of one month in at least two newspapers published in Halifax, and also, if there be any, in one newspaper of the county where the lands lie, requiring them to attend at such time and place, personally or by attorney; and the judge shall require the directors to nominate one appraiser, and such owners to unite in naming two appraisers, and the judge shall nominate two appraisers; but in case such owners do not attend, or shall neglect, or refuse, or can not agree to make such nomination, the judge shall, on proof of such publication, or service of such notice, nominate four appraisers, and shall, by an order in writing, direct the said five appraisers to value the lands so required; and the appraisers, having first subscribed an affidavit in writing, to be sworn to before a Justice of the Peace, and annexed to such order, to the effect that they will faithfully make such appraisalment, shall with all convenient speed proceed to and appraise such land, and shall make such appraisalment in writing, and return it, under the hands of the appraisers, or a majority of them, with such order and affidavit, to a Judge, who may confirm, modify, alter, or reject such appraisalment, or direct an appraisalment *de novo*; and the company upon paying or tendering the amount of the appraised value as finally confirmed, and the expenses of the owners on such appraisalment, to the owners, or in case of dispute to such parties as the Court or a Judge shall direct, and registering such order, affidavit, appraisalment, and confirmation, in the office of the Registrar of Deeds in the county in which such lands lie, who is hereby required to register the same, shall be considered the owners of such lands.

11. The books and accounts of the company shall at all times be open to the examination of such persons as the Governor in Council shall appoint to inspect the same.

12. This act shall cease and determine if effective works shall not be commenced and continued under it within two years from the date of its passing.

13. It shall be lawful for the company to make or construct a railway over and across any roads in the line of the projected railroad, and over and across any railroads or tramroads, and over any river, brook, or stream; subject, nevertheless, in such cases, to regulations

to be made by the Court of Sessions to ensure the safety of the inhabitants and their property.

14. The company may proceed, either alone or with any other company, to render navigable any portion of Merrigomish harbor that is not at present navigable, by deepening, widening, or extending the channels, or by opening a new channel or channels. They may erect piers, breakwaters, and shipping places for coal upon any lands owned by the company, or acquired as herein provided, or upon any lands of the Crown in respect of which permission shall be granted by the Governor in Council, in and about the shores of such harbor. The portions of such harbor thus rendered navigable shall be open and free for the use of all ships, vessels, and boats, and to all persons desirous of using the same for trading purposes, subject to such tolls and regulations at such rates as shall be fixed by the company and approved by the sessions of the county.

BYE-LAWS

OF THE

Merigomish Coal Mining Company OF NOVA SCOTIA.

ARTICLE I.

NAME OF COMPANY.

This Company shall be called the MERIGOMISH COAL MINING COMPANY.

ARTICLE II.

APPOINTMENT OF OFFICERS.

The affairs of the Company shall be managed by four Directors. The President to be chosen from the Directors, and by same. In all cases of tie the President to have the casting vote. No person eligible for office of Director unless holder of 100 shares.

ARTICLE III.

DUTIES OF PRESIDENT.

The President shall have power to execute all documents on behalf of the Company, and shall direct the calling of all meetings of the President and Directors and Shareholders, and preside thereat, and perform any and all acts and things appertaining to a general supervision of the affairs of the Company, under the majority of the Directors.

ARTICLE IV.

DUTIES OF TREASURER.

It shall be the duty of the Treasurer to receive and keep in the office of the Company, all Notes, Deeds and other securities and valuable papers belonging to the Company; to collect and receive all monies and other dues to the Company, and make such disbursements as the Board of Directors shall order, and to keep in the office of the Company full and accurate accounts of all payments and receipts, and of all the property of the Company, open to the inspection of the Directors and Stockholders, and to obey all lawful orders of the Board of Directors respecting such property and accounts.

All monies received from any source on account of the Company, shall be at once deposited by the Treasurer in the name of the Company, in the Bank or Trust Company selected by the Board of Directors. And all demands against the Company shall be paid by checks, signed by the Treasurer and countersigned by the President. No liabilities or indebtedness of the Company, exceeding in the whole five hundred dollars, shall be incurred by the Treasurer without a vote of the Board of Directors, entered upon their records.

ARTICLE V.

DUTIES OF SECRETARY.

The duty of the Secretary shall be to keep at the office the records of the Company, to attend all meetings of Stockholders and of Directors, to keep the minutes and all the books of the Company, to keep an account of all issues and transfers of stock, and to sign certificates of the same with the President, to affix the seal of the Company to all Stock Certificates and other documents, to give the notice for all meetings of the Stockholders and Directors, and under the direction of the President take a general charge of the affairs of the Company.

ARTICLE VI.

CORPORATE SEAL.

The corporate seal of the Company shall have this inscription:

MERIGOMISH COAL MINING COMPANY, A. D. 1866.

and shall be of such form and size as the President and Directors shall approve.

ARTICLE VII.

ANNUAL MEETINGS AND ELECTIONS.

The annual meeting of the Stockholders for the choice of Directors and other business, shall be held at the office of the Company in the City of Halifax on the third Monday in January of each year, at three o'clock, p. m., and ten days' notice thereof shall be given by the Secretary, by publication in one newspaper in Halifax City, or by printed notice, given to each Stockholder personally, or deposited in the Post Office, directed to his place of business as appearing in the Company's books. And any five or more Stockholders present, representing not less than a majority of the Capital Stock, shall constitute a quorum for business; the President to call meetings of the Stockholders for special purposes at any time upon a requisition signed by ten persons, representing at least one quarter of the Capital Stock of the Company, giving ten days' notice thereof, as above provided.

ARTICLE VIII.

VOTES, &c.

Every Stockholder shall be entitled to one vote for every five shares, but no Stockholder shall be entitled to more than fifty votes, and may vote by proxy authorized in writing, and all questions respecting the right of voting shall be determined by the evidence of the proprietorship of shares existing on the records of the Company, and the within proxies produced. And all questions may be decided by ballot.

ARTICLE IX.

ANNUAL REPORT OF DIRECTORS.

The retiring Board of Directors shall, at the annual meeting, exhibit to the Stockholders a full and accurate report of the affairs of the Company, shewing the receipts and disbursements of the previous year, the amount of Coal mined, &c., together with a general statement of the affairs of the Company.

ARTICLE X.

CALLS FOR INSTALLMENT.

The several persons who are at present Stockholders in the Company, or who shall hereafter subscribe for Stock in the same, shall be liable to pay up all and every such installment or installments after ten days' notice being given, as they may be called upon from time to time by the President and Directors; the President and Directors are hereby authorized, if the same be not paid at the time mentioned in such call, to charge interest thereon from the time of such call until paid, and every Stockholder so neglecting to pay such installment, shall be liable to pay such interest; and in default of such

payment, the President and Directors shall have power to sue for the recovery of the same, or at their option, after thirty days' notice to that effect given by the Secretary to the party or parties in default, the President and Directors may declare the share or shares held by such party or parties respectively forfeited, and may sell and transfer the same.

ARTICLE XI.

STOCK CERTIFICATES.

After the registration of such share or shares as aforesaid, a certificate, to be approved by the President and Directors, under the seal of the Company, and signed by the President and Secretary, shall be delivered to every proprietor or Stockholder, specifying the share or shares to which he or she is entitled in the Company; and such registry of the certificate of a share or shares shall be evidence of the property or ownership thereof.

ARTICLE XII.

TRANSFER OF SHARES.

In all cases the share or shares of every Stockholder shall be liable to the Company for all debts in any wise incurred by such Stockholder to the Company, and all transfers shall be entered and subscribed by the parties in the Company's books.

ARTICLE XIII.

OF BOOKS AND ACCOUNTS.

The books, accounts and papers of the Company shall be open at all times to the inspection of the President and Directors, and the Secretary shall furnish an account of the affairs of the Company whenever required by the President and Directors to do so.

ARTICLE XIV.

DIRECTORS NOT SERVING.

When a Director or Directors shall decline serving, after being duly elected at any Annual General Meeting, such meeting shall immediately proceed to elect another in the place of such Director or Directors so declining, or if necessary, a "Special" General Meeting of the Company shall be called, for the purpose of electing such new Director or Directors.

ARTICLE XV.

DIVIDENDS.

Dividends of the profits of the Company shall be declared and paid from time to time as shall appear to the President and Directors advisable.

ARTICLE XVI.

APPOINTMENT OF SUB-OFFICERS.

The President and Directors to appoint all office-holders under them, and discharge same if necessary.

ARTICLE XVII.

ALTERATION OF BYE-LAWS.

These Bye-Laws, as now adopted, may hereafter, upon the request of any one of the Directors, be submitted for amendment to the Board of Directors, and be amended by a majority vote of a full Board at any regular and stated quarterly meeting thereof; provided that two weeks' previous notice of the proposed amendment shall have been given to all the other members of the Board, or they may be amended at any regular called meeting without such previous notice, by the unanimous vote of the Board of Directors.

AMENDMENT.

At a meeting held on the 27th day of April, the 2d Article of these Bye-Laws was amended so as to allow the appointment of one additional Director.

REPORTS.

REPORT OF WILLIAM BARNES, ESQ., MINING ENGINEER, OF HALIFAX, N.S.

My attention having been directed at the request of L. R Kirby, Esq., to two areas of 5 square miles each under license to him (Nos. 1 and 2 on the accompanying plan), I have embodied the results of my observations in the following brief remarks.

On area No. 1, the southern half alone can be considered valuable, as the northwest portion consists of Strata lying below the productive coal beds.

A license to work on the area No. 1 of one square mile can be so laid out as to comprise several workable seams of Coal, one of which is five feet in thickness, and formerly worked by one John McKay. But little Coal was extracted owing to the want of means of the owner to sink a shaft and put up the requisite works. I examined this seam, and also some of the Coal taken from it. It appears to be of very good quality, and well adapted for domestic and forge purposes. Persons residing in New Glasgow who have used it speak well of its quality.

That the McKay seam, as also all the others in the locality, thicken as they descend, and improve in quality is beyond dispute. By measurement the rate of increase of thickening here is one inch in 4 feet.

The cropping of three other seams also shew, and these run into and under area No. 1.

The existence of Oil Coal on this area can be relied on, but no test of its quality has yet, I believe, been made. The large seams of the Albion mines should pass into part of this area, but have not as yet been discovered.

Coal here can be mined at a distance of about $1\frac{1}{4}$ miles from the Pictou extension line at New Glasgow, and carried to that place by a tram road at an easy grade, and thence on the Pictou line to the place of loading on the East River. The expense of the tramway would not exceed \$3000 per mile, (including light T rails,) there being little cutting or filling required.

I do not consider any locomotive engine would be required, as the cars can be worked by their own gravity in their descent, and returned to the pit either by horses or wire rope, in connection with a small stationary engine similar to the long incline used at the Mining Association's works, Sydney.

It is on Area No. 2 that the largest amount of Coal can be relied upon. Here two square miles of surface will give five (if not more) workable seams. One of these, the Barton seam, found on the area of R. G. Haliburton, Esq., is 10 feet in thickness, another, the McBean seam, near widow McLane's house, is 7 feet in thickness, and probably more, as two feet only of the lower bench of coal were gone through in the opening made on it. This may probably be one of the large seams wrought by the Mining Association at the Albion mines.

The McKay seam, worked by George McKay, is 4 feet 3 in. in thickness in the Lindsay Pit, and 5 feet 3 in. where bored through on area No. 2; it is overlaid 60 feet vertically by another seam of 3 feet 2 in.,—both of which seams can be worked by one set of Pits, and thus being equal to a seam 8 ft. 5 in.

The rich Oil Coal of the George McKay area, 6 ft. in thickness, will also be found on No. 2. This Oil Coal at the surface has, I am informed, yielded 62 gallons of crude Oil per ton, and from my own knowledge of it, I do not think this amount over-estimated. From the course of strike and other surface indications, I consider area No. 2 will contain all the known seams of the district, and should yield seams containing in their aggregate a thickness of 73 feet.

Assuming the entire two miles to be selected to contain at the least two thirds of the above quantity in thickness over their whole extent, a total of upwards of 48 millions of tons is shewn. In this calculation the amount required for support of roof, &c., has been deducted. Of course, on such an estimate, a large deduction must also be made for accidental loss of workings. But even deducting $\frac{1}{4}$ of the amount mentioned, a quantity remains that renders this one of the most valuable properties in the Province.

As to the facilities for shipment from this area, a glance at the plan will show that Merigomish Harbour, on which the eastern part of the area No. 2 abuts, is, by its sheltered position, depth and extent, well adapted for the accommodation of all the shipping required for the export of the Coal raised. Vessels of over 1000 tons have frequently entered it for the purpose of loading with timber. Owing to the close proximity of Pieton Harbour, however, vessels invariably use that as a shelter.

On examining Capt. Bayfield's Chart of Merigomish, published in 1842, I find the depth of water ranging from 35 feet at the entrance to 9 feet in Big Gut. I had soundings taken through the ice at low tide from Cameron's Point to Munroe Head, and find an average of 12 feet of water in a nearly straight channel, the minimum of depth being 10 feet, with a black mud bottom, into which a searching rod can be driven by hand 10 and 12 feet.

To accommodate vessels of a large class, some dredging will be necessary; the bottom being soft mud, the cost should not exceed 20 cents per cubic yard. About 1600 yards will be the maximum required to allow vessels drawing 15 and 16 feet to proceed to Cameron's Point, that being the nearest spot to the probable site of the permanent Pits and Works. A line of valley extends from thence through

area No. 2, by which a line of railway not exceeding one mile will connect the very heart of the workings with the place of shipment. No natural obstacles exist to render the construction of a line of railway either difficult or expensive.

A wharf of piles, 150 feet in length, will give ample depth for loading.

In conclusion I would recommend a careful selection of ground on Areas No. 1 and 2, and a judicious course of exploration to be carried on during the coming summer, to determine fully the extent, number and direction of strike of the various seams before the opening of any permanent pits or establishments of the works on the mine.

If the line of railway be determined on, grading may at once be commenced, and the building of the wharf undertaken, as under favorable circumstances several cargoes may be shipped before the ensuing winter, by which the quality of the Coal will be established.

I have not as yet seen any analysis of either the McBean, Barton or McKay seams, but from an examination of Coal from each of these I judge them to be of very good quality, free from injurious earthy admixtures, and no doubt excellent steam and Gas Coals. The established character of all the Coals from the Albion mines district is so well known that nothing need be said on the subject. Reference to essays made by Mr. Dawson and Professor Johnson may be seen in the "Acadia Geology," page 260, and a more recent analysis of Coal from the "French" seam by Prof. B. Silliman in the prospectus of the Nova Scotia Coal Company.

WM. BARNES,
Mining Engineer.

HALIFAX, N. S., March 15, 1866.

REPORT OF JOHN RUTHERFORD, ESQ..

Inspector of Mines for Nova Scotia.

HALIFAX, N. S., March 8, 1867.

*To the Directors of the
Merigomish Coal Mining Co. }*

GENTLEMEN,—

On the 13th ult. I visited your coal property near New Glasgow, in the County of Pictou, in accordance with your request, and now beg to submit the following report:—

The property consists of two adjoining mining areas, each one square mile or 640 acres in extent, held under a license to work, and four square miles held under a license to search, from the Provincial Government. The western boundary of the areas is about half a mile from the town of New Glasgow, and from it the property ranges in a south-east direction.

Near this boundary, boreholes have been put down and trial pits sunk, with the following result: At a depth of thirty feet a seam of coal was reached, the thickness of which in the shaft is about ten feet. It dips a little to the east of south at an angle of about fifty degrees. The true or geological thickness I could not exactly ascertain in consequence of the state of the bottom of the shaft from the water which had been standing in it and only been removed a few hours before I went down. It will not be much under seven feet.

This seam is evidently one of those portions into which the main seam of the Albion Mines is divided, as shewn by the operations of the Montreal and Pictou Company on the west side of the East river. Its position accords with the line of crop proved by that company, and though a further opening of it may be necessary to identify it with any particular bed of the series passed through in their shaft, there can be no doubt that it is the easterly continuation of one of the beds—most probably the upper one—forming the northern crop of the main seam. A trial pit situated to the north-east of this shaft is reported by Mr. Kirby to have proved a seam dipping south forty degrees east. I am unable from my own observation to verify this statement; but, assuming its correctness, the crop appears to be following the range of the conglomerate, lying to the north of the measures. An opening about one mile and a half to the south-east of this pit appears to confirm the position, and little reason is therefore left to doubt that the seam exists throughout the whole of your western area. The qualities of the main seam are so well known that it is almost unnecessary to allude to them. For gas and general purposes it commands a very large sale, and the fact of the great demand for smith's purposes of the slack made in working it, is a strong proof of its purity of character. For some time a considerable proportion of the workings at the Albion Mines has been in a district on the same side of the East River as your property is situated; and I am enabled, from a recent official visit, to assert the excellence of its quality there.

Respecting this seam, I may add, that the shaft sunk by the Montreal and Pictou Company passed through thirty-seven and a half feet of coal of the following thicknesses and order of succession, viz.: 10 ft. 6 in., 9 ft., 2 ft. 6 in., and 15 ft. 6 in., which are separated by strata varying from nine to twenty-three feet in thickness. Whilst some change in the thickness of the different portions forming this aggregate may be probably found in different parts of this coal field, I do not anticipate much change in this respect in your western area. It may be reasonably inferred too that the underlying seams, as proved at the Albion and Acadia Mines, will also be found on this side of the basin. These are five in number, and vary from four to twenty feet in thickness.

About three quarters of a mile to the south-east of your western boundary, a seam has been opened in "Coal Brook" by adit, and partially worked. It varies in thickness from four and a half to five feet, and is of very fair quality.

On the "Marsh," situated about two miles south-east of this, trial

pits have been sunk to a seam which has been opened by slope on the adjoining property near the south-west boundary of your east area, by Mr. McKay. The thickness of this seam and of one overlying it—proved by trial pit—is at present four feet; it dips to the north-east. The quality of the coal is very good, portions of it being remarkably pure and fine.

Further to the east I examined a seam opened by Mr. McBean: it appeared to be from five to six feet in thickness, but owing to its being only partially opened I cannot speak of it with any degree of certainty, and only refer to it because the dip of the seam—to the north-west—probably indicates the position of the coal field in this locality.

The preceding embraces all the points to which my attention was directed with respect to the number of seams on your property. The comparatively unexplored character of this district of the Pictou coal field renders it difficult to assign at present their true geological position to each seam. The "Coal Brook" seam is doubtless an upper seam with respect to the main seam; that the coal sunk to on your western boundary is one of the representatives of the latter seam is almost equally clear; the seams on your eastern boundary, to the rear of McKay's slope, on the other hand, are so different in many respects from either the main seam or those underlying it that it is at present entirely conjecture whether they are distinct seams or not. A careful consideration of all the circumstances, however, leave no reason to doubt that the areas under license to work contain several millions of tons of coal.

The proximity of your western area to the Nova Scotia Railway and the town of New Glasgow, as well as the thickness of the seam opened on it, naturally point to that locality as the most suitable for commencing operations. The angle at which the seam is lying imposes to some extent a limit to the choice of the mode of effecting a winning. The most effectual method of opening a seam lying at a small angle of dip is, to sink a shaft well to the dip; this course, however, if adopted in this instance, would necessitate a very large outlay. For, though the angle of the dip would be much less in proceeding from the crop, the heavy dip there rapidly places the seam at a great distance from the surface. The other mode of making a winning is by slope driven in the seam from the crop. This is attended with several advantages, the chief of which are as follows, viz.: a greater breadth of coal is more rapidly won, and the cost of winning somewhat lessened by the sale of the coal produced in the slope; a less powerful engine is required for hauling than for hoisting. The latter method is, I am therefore of opinion, to be preferred under the circumstances above described.

The position of the slope—which I recommend to be driven directly to the dip—must be regulated by the length it must be driven to win such a quantity of coal as will enable a large yield to be produced for several years, and thus render unnecessary an early additional outlay of capital in making a fresh winning. This slope should not be driven a less distance in the first instance than 300 feet. To

effect this winning I recommend the erection of a steam engine of not less than 30 horse-power, to be adapted to haul and pump, and would advise that as soon as it is determined to commence operations, one of the earliest steps should be the putting of this engine into position, as the driving of the slope will be much facilitated thereby. To connect the Colliery with the Nova Scotia Railway, a branch line will be required. This will not, I think, exceed a mile in length. It would have enabled me to arrive at a closer approximation of cost had a route been fixed and the line been surveyed and levelled. I may state, however, that the surface formation is exceedingly favorable for the construction of a railway; and as it will be over cleared land, and as it presents no engineering difficulties whatever, I am of opinion that the length of way required—which I have assumed to be a mile—will be made at a cost very considerably below the ordinary rate of formation in this country. The cost of making a winning in the manner suggested, and to the depth of 300 feet, including steam-engine, surface erections, machinery, making a mile of railway, and placing the Colliery in good working order, I estimate at £7500 (\$30,000).

I have not in this estimate included cost of workmen's houses, as from the nearness of the Colliery to New Glasgow any provision in this respect is, I consider, unnecessary. A usually expensive item in Colliery establishments is thus saved. Nor does this sum include any outlay for shipping places, which will have to be provided in addition.

The preceding suggestions and estimate have reference only to a winning on your western area. The distance of the eastern area from the Nova Scotia Railway will probably prevent an immediate opening to any extent in that locality; I have not therefore deemed it necessary to give any consideration at present as to the position for a winning or the cost thereof. I would, however, recommend the reopening of the shaft referred to in Mr. Kirby's report, and a continuance of the drift, in order to prove the coal to a greater extent, as in all probability the seam will be found increased in thickness to the dip.

The cost of working a seam lying at such an angle as that on which a winning is recommended to be made, is dependent on many circumstances which are variable in character—such as firmness of roof and floor of the mine, freedom from water, &c. The limited space for examination is scarcely sufficient to allow of an opinion on these points; but so far as my observation guides me, I see no reason to anticipate any difficulty from these causes, and I estimate the cost of working and putting on board ship at \$1.50 (one dollar and fifty cents) per ton.

I am, gentlemen,

Your obedient servant,

JNO. RUTHERFORD.

REPORT OF CHARLES ROBB, ESQ.,

Mining Engineer of Montreal, Canada.

GENTLEMEN,—

On a recent occasion I visited and inspected your extensive coal-mining property, situated in Pictou County, Nova Scotia, and in compliance with your request, I now beg to submit the following remarks, embodying the results of my observations.

You have already received professional reports upon your property from John Rutherford, Esq., Government Inspector of Mines, and from Wm. Barnes, Esq., Mining Engineer. These reports have been submitted to, and carefully studied by me, and are so full and explicit as almost to render further details on my part unnecessary. Both from personal acquaintance with these gentlemen, and from their well-known high character, scientific and practical attainments and experience, I am satisfied that the utmost reliance may be placed on their statements, which have been, for the most part, verified by my own observations, and need not here be recapitulated. I shall, therefore, on the present occasion, confine myself to a few general remarks, and to a statement of such additional facts, bearing upon the subject, as have transpired subsequently to the date of the reports referred to.

The property comprises three square miles, or 1920 acres, of land, held under license to work from the Provincial Government, and included in one irregularly shaped block, as denoted by the red tint on the accompanying Plan. It is situated on the east side of East River, in the immediate vicinity of the town of New Glasgow, and towards the centre of the great Pictou Coal Basin. The boundaries of the property, in the northerly direction, have been determined and defined mainly by the lines of the outcrop of the principal coal seams of the district, which will be found to occur within and near to these boundaries, and dipping to the south, so as to underlie the whole property. Your areas also include a narrow strip, fifty yards wide, and two and one-half miles in length, formerly a government reserve between two adjacent areas, but now acquired by you, and which is known to overlie some most valuable seams higher in the series than those above referred to.

The evidences of the value of these lands as a coal-mining property, consist,—first, In the facts of the actual discoveries of coal made upon them; secondly, In the results of the working upon adjoining properties in similar conditions, and from which a like success may be reasonably inferred on yours; and, thirdly, In the knowledge which has been acquired by extensive and costly explorations of the whole

structure of the Pictou Coal Basin, and which places it beyond a doubt that your property is included within it.

Near the western extremity of your property, a trial shaft, marked No. 1 on the Plan, has been sunk to the depth of about 50 feet upon the crop of the *main seam*, which must skirt your northern boundary throughout its entire extent, with a southerly dip. The results of this work, and the inferences legitimately deducible therefrom, have been fully set forth by Mr. Rutherford; and, finding them entirely in conformity with my own observations and judgment, need not here be repeated. Since that gentleman's report was made, the works referred to by him at the Montreal and Pictou Company's Mines, about a mile and a half to the west, and upon the same outcrop, have been prosecuted to a considerably further extent, shewing a gradual and very marked improvement in the quality of the coal as it is followed in depth.

From the known structure of that part of the coal-field underlying your property, as well as from the results of actual observations and trials, it is certain that, on tracing this outcrop to the east, the dip will become more moderate, and the condition of the coal-fields, in all probability, proportionately improve. Besides the main seam, which at the Albion Mines is $37\frac{1}{2}$ feet in thickness, it is most reasonable to infer that, although not yet discovered, the other great underlying seams found there will also occur on your part of the Basin; in which case, the quantity of coal underlaid by your areas will be enormous and practically inexhaustible.

Overlying the main seam, at a distance of about one-third of a mile horizontally, the *Coal-brook seams* have been developed upon a property immediately adjoining yours to the south (openings marked Nos. 2 and 3 on the plan). These seams, so far as hitherto discovered, are two in number, of the thickness of 5 feet 6 inches and 4 feet respectively, and not over 50 or 60 feet apart vertically. They have been tested to a considerable extent, and found to yield, even at the crop, a very fair merchantable article of coal, about 200 tons of which have been extracted and sold. These seams must underlie a great extent of your property at a very moderate depth; and their attitude being nearly horizontal, will be cheaply and easily worked, and at a distance not exceeding a mile and a half from New Glasgow.

A similar set of seams, probably overlying, and still higher in the series than those last referred to, has been discovered and partially worked (at Nos. 4, 5, 6 and 7) towards the south-west boundary, and near the middle of the length of your property. These consist of two workable seams of most excellent coal, the lower being 4 feet 2 inches thick at the crop, and the upper about 3 feet 6 inches; and dipping about north 45° east, or directly on to your property at an angle of 12° . On an adjoining area, and within 9 chains from your south-west line, this seam has been worked by a slope (No. 4) 116 feet deep, and a gallery 176 feet in length, and from 1000 to 2000 tons of coal extracted and sent to market, where it is reported at least as valuable as any in the district. At No. 5, on your strip of land before

referred to, the same seam has been cut by a trial-shaft 37 feet in depth, and 50 tons of the same excellent quality of coal extracted. At No. 6, upon another adjoining area, but very near to yours, both seams have been found in good condition, and having been intersected more to the deep, have shown a decided increase in thickness, as well as improvement in the quality, which are certain to continue as they are still further worked in depth. The overlying seam at the crop is from 3 to 4 feet in thickness, and somewhat sulphureous; but where cut in the shaft at No. 6 is thick and of much better quality. Other promising seams have been exposed at this part of the property, but not having been worked upon, I have no positive details to communicate. A thick seam of excellent oil coal, yielding upwards of 60 gallons of crude oil to the ton, also occurs here, and must underlie, at a moderate depth, a considerable area towards the south-east part of your property.

Towards the same direction, and at no great distance outside of your limits, two other most important seams have been discovered, and opened a little at the crop. The first of these, marked No. 8, called the *McBean seam*, shews a thickness at the crop of 7 or 8 feet; the quality of the coal seems very excellent, and the dip being to the north-west, at an angle of 20° , will carry it a moderate depth under your property. The other, called the *Haliburton seam*, still nearer your boundary, (No. 9,) shows a thickness of not less than 10 feet; its dip is ambiguous, being somewhat disturbed at the crop, but from the general structure of the coal-field, there can be no doubt that they also will, to a greater or less extent, underlie your property, on the surface of which, near this point, great quantities of drift coal have been found, probably owing their origin to this seam. The true geological position of the McBean and Haliburton seams is as yet undetermined.

The above facts, and the additional details communicated by Messrs. Rutherford and Barnes, will make it abundantly evident that you possess a coal-mining property of very great value. The estimate made by the latter gentleman of the total thickness of workable coal which may be expected to be found upon the property is, according to my observations, and to the best of my judgment, a correct and safe one; but as you actually possess three square miles of mining property, instead of two, most of which may be expected to prove equally valuable, it would appear, at a rough estimate, that the total amount may be increased by about one-third, making 64 instead of 48 millions of tons.

The advantages possessed by your property, as regards facilities for working, proximity to shipping ports, etc., are amply set forth in the other reports referred to. For the west and middle parts of the property, the most convenient outlet will be New Glasgow, to which there are already good roads traversing it in all directions. A short rail or tramway, in the construction of which the proprietors of adjoining coal-mining areas would probably combine, will greatly facilitate and cheapen the transportation to that point. The East River, at New

Glasgow, is navigable for vessels drawing nine feet of water, and could probably, with little expense, be made to accommodate vessels of much greater tonnage. The Nova Scotia Railway passes through New Glasgow to Pictou Harbor, on the one hand, a distance of only seven miles, and to Halifax on the other, distant about 100 miles; and will afford a convenient means of transportation at all seasons. This railway being controlled by government, every encouragement, in the way of low freights, etc., will doubtless be extended to the coal-mining interests of Nova Scotia. I understand that the tariff of freight for coal has been fixed at the low rate of one cent and a half per ton per mile.

In reviewing all the facts which have been established in connection with this property, I beg to state that a considerable proportion of its area, towards the north and east, is only partially developed; and in that part the evidence for the existence of the great seams of the Albion mines, in a good and workable condition, is only inferential, although in the highest degree probable. On the other hand, the two sets of seams of most excellent coal occurring at the Coal-brook, and at the south-west part of the property, amounting in the aggregate to 18 feet in thickness, must, without doubt, underlie a very large area on the lands owned by you, and are sufficient of themselves, independently of the others, to establish its great value, as forming the basis of a very extensive and highly lucrative coal-mining business.

I have the honor to be,

Gentlemen,

Your most obedient servant,

CHARLES ROBB,
Mining Engineer.

